

IN THE CLAIMS

1.-3. (Canceled)

4. (Currently amended) ~~A~~ ~~The~~ video signal coding method according to claim 1 comprising the steps of:

determining a coding difficulty level d of an input video signal for each unit of time;

measuring visual characteristics of the input video signal;

determining a reference value for allocating coding bits on the basis of temporally b (d) for the amount of coding bits b allocated for each unit of time and related in advance to the coding difficulty level d of said input video signal for each unit of time;

determining an actual amount of allocated coding bits b_x on the basis of the reference value; and

generating coded data by coding the input video signal for each unit of time on the basis of said actual amount of allocated coding bits b_x, wherein part of the sum B_av of the amounts of allocated bits b_av per unit time for a certain period of time T_vbr, or

$$B_{av} = b_{av} \cdot T_{vbr},$$

is stored as virtual buffer V_vbr in advance and the actual reference value of the amount of allocated coding bits b_real is obtained by

$$b_{real} = (B_{av} - V_{vbr}) / T_{vbr}$$

so that an amount of allocated bits not smaller than b_{real} is given as long as $V_{\text{vbr}} > 0$ but an amount smaller than b_{real} is given otherwise in said step of determining the actual amount of allocated coding bits on the basis of said reference value.

5. (Original) The video signal coding method according to claim 4, wherein an upper limit is provided in advance according to the amount of allocated bits b_{av} when giving an amount of allocated bits exceeding said b_{real} .

6. (Original) The video signal coding method according to claim 4, wherein a lower limit is provided in advance according to the amount of allocated bits b_{av} when giving an amount of allocated bits smaller than said b_{real} .

7. (Original) The video signal coding method according to claim 4, wherein the upper limit is provided according to a proportion of scenes that are conspicuously degraded as a result of coding by taking the visual characteristics of the input image into consideration when giving an amount of allocated bits smaller than said b_{real} .

8. (Original) The video signal coding method according to claim 4, wherein, when the difference between the sum of the amounts of actually generated bits B_{gen} in the period of time and the sum of the amounts of available bits B_{av} in the period of time ($B_{\text{av}} - B_{\text{gen}}$) is positive when the coding operation in said period of time T_{vbr} is over, the difference is carried over and added to the sum of the amounts of available bits in the next period of time.

9. (Original) The video signal coding method according to claim 4, wherein, when the sum of the amounts of available bits exceeds R_{total} times of the initial sum B_{av} as a result of carrying over the difference, the reference value of the actually allocated bits per unit time b_{real} is raised according to the ratio.

10.-11. (Canceled)

12. (Currently amended) ~~A~~ The video signal encoder according to claim 10 comprising:

a means for determining a coding difficulty level d of an input video signal for each unit of time;

a means for measuring visual characteristics of the input video signal;

a means for determining a reference value for allocating coding bits on the basis of temporally b (d) for an amount of coding bits b allocated for each unit of time and related in advance to the coding difficulty level d of said input video signal for each unit of time;

a means for determining an actual amount of allocated coding bits b_x on the basis of the reference value; and

a means for generating coded data by coding the input video signal for each unit of time on the basis of said actual amount of allocated coding bits b_x , wherein said means for determining the actual amount coding bits on the basis of the reference value controls the actual amount of allocated bits in such a way that the sum of the generated bits obtained when coding the input video signal for a certain period of time T_{vbr} does not exceed the amount of bits

available for recording a signal having the length of the period of time T_{vbr} on a recording medium.

13. (Currently amended) ~~A~~ The video signal encoder according to claim 10 comprising:

a means for determining a coding difficulty level d of an input video signal for each unit of time;

a means for measuring visual characteristics of the input video signal;

a means for determining a reference value for allocating coding bits on the basis of temporally b (d) for an amount of coding bits b allocated for each unit of time and related in advance to the coding difficulty level d of said input video signal for each unit of time;

a means for determining an actual amount of allocated coding bits b_x on the basis of the reference value; and

a means for generating coded data by coding the input video signal for each unit of time on the basis of said actual amount of allocated coding bits b_x, wherein part of the sum B_av of the amounts of allocated bits b_av per unit time for a certain period of time T_{vbr} , or

$$B_{av} = b_{av} / T_{vbr},$$

is stored as virtual buffer V_{vbr} in advance and the actual reference value of the amount of allocated coding bits b_{real} is obtained by

$$b_{real} = (B_{av} - V_{vbr}) / T_{vbr}$$

so that an amount of allocated bits not smaller than b_{real} is given as long as $V_{vbr} > 0$ but an amount smaller than b_{real} is given otherwise in said step of determining the actual amount of allocated coding bits on the basis of said reference value.

14. (Original) The video signal encoder according to claim 13, wherein an upper limit is provided in advance according to the amount of allocated bits b_{av} when giving an amount of allocated bits exceeding said b_{real} .

15. (Original) The video signal encoder according to claim 13, wherein a lower limit is provided in advance according to the amount of allocated bits b_{av} when giving an amount of allocated bits smaller than said b_{real} .

16. (Original) The video signal encoder according to claim 13, wherein the lower limit is determined as according to a proportion of scenes that are conspicuously degraded as a result of coding by taking the visual characteristics of the input image into consideration when giving an amount of allocated bits smaller than said b_{real} .

17. (Original) The video signal encoder according to claim 13, wherein, when the difference between the sum of the amounts of actually generated bits B_{gen} in the period of time and the sum of the amounts of available bits B_{av} in the period of time ($B_{av} - B_{gen}$) is positive when the coding operation in said period of time T_{vbr} is over, the difference is carried over and added to the sum of the amounts of available bits in the next period of time.

18. (Original) The video signal encoder according to claim 13, wherein, when the sum of the amounts of available bits exceeds R_{total} times of the initial sum B_{av} as a result

of carrying over the difference, the reference value of the actually allocated bits per unit time b_{real} is raised according to the ratio.

19. (Previously Presented) A video signal coding method comprising the steps of:

utilizing a virtual buffer;

allocating an amount of information greater than b_{real} to an image showing a relatively high coding difficulty level, where b_{real} is obtained by

$$b_{\text{real}} = (B_{\text{av}}) \times (R_{\text{vbr}}); \text{ and}$$

controlling a bit rate based on an amount of residue, where the amount of residue is obtained by

$$(b_{\text{real}} - b_{\text{av}}) \times (T_{\text{vbr}});$$

wherein an amount of information smaller than b_{real} is allocated to an image showing a relatively low coding difficulty level.